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ABSTRACT

Although it is evident that the Industrial Age has given way to the Information Age, educational institutions are still using Industrial Age models of instruction that encourage passive learning and stress knowledge mastery. In the media-rich Information Age, educators must shift to instructional models that put learners at the core of both the curriculum and delivery systems and encourage them to become actively engaged in the acquisition of knowledge. The multi-access education model includes three delivery formats existing simultaneously: the traditional format, the on-campus facilitated format, and the off-campus distance learning format. Each delivery system is content independent, has its own unique instructional design, incorporates a learner-centered philosophy, and is extensively supported by technology. Educational institutions can move to a learner-focused delivery system by providing all three formats through a comprehensive multi-access education initiative. It is important, however, that colleges plan and budget for adequate technology acquisition, training, and administrative support for implementation. In addition to providing better instruction to learners, this approach also increases accessibility and thus increases a college's potential audience. Finally, the use of learning labs and distance education allows for the use of less expensive paraprofessionals and for holding classes without additional classroom space. (Contains 11 references.) (KP)

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Multi-Access Education:

A Model for Instructional Delivery in the Information Age

Presented at the League for Innovation in the Community College

Reinventing the Community College Conference

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(Nashville, TN, November 14-17, 1993)

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Abstract

This paper reviews the rational for a shift in paradigms from the Industrial Age model for education to one that is responsive to the demands of the Information Age. It proposes the implementation of a learner-centered model that provides a variety of delivery strategies to meet the needs of the learners in our changing society.

Multi-access education is proposed as the instructional model that meets these criteria. The multi-access model includes three formats of delivery, the *traditional format*, the *on-campus facilitated learning format* and the *off-campus distance education format*. Each of these formats along with their instructional implementation plan is described. The role of technology in each of the formats is explored. Administrative issues associated with the restructuring necessary to implement multi-access education are identified and discussed.

The paper concludes with a call for higher education to move into the Information Age to better prepare students to take their place in the 21st century.

Rationale

Few would argue that we have indeed entered the Information Age. The information explosion engulfs us. We struggle to find efficient ways to absorb, process, and organize an avalanche of data. We build machines and create electronic highways to assist us in keeping the information flowing; to help us locate the data we need to make the daily decisions that keep our institutions functioning. We have exited the less complex, more defined industrial era. Every one of us has been impacted by these changes both personally and professionally. Business and social organizations are reeling from the speed and intensity of the changes. Education is suffering no less.

The primary function of education is socialization. This can be broadly defined as the preparation of the individual to take a meaningful and fulfilling role in society. Society drives education. Education reflects the society it serves. Historically, early American agrarian society dictated the school year. Later, the industrial society became a model for educational organization. Students became the raw material which moved along an educational assembly line. They experienced a sequence of processes (classroom teaching) in order to become a finished product (an educated citizen). Since education as an institution is slow in its response to social changes, these historical influences continue to define both an academic year along agrarian parameters and an educational process consistent with the industrial model.

In the Industrial Age school, the student exited the process with the knowledge and skills necessary to take his or her place in the social order. Some went on to higher education to further study and gain mastery of a specific discipline. These better educated students exited the

additional instructional process with the knowledge necessary to take leadership roles in the social order. The basic assumption in this model is that of *knowledge mastery*. The educational institutions assumed that the individual, when exposed to the process, would be sufficiently socialized. Individuals who passed through the various strata of processes exited with the knowledge that they would need to function at their desired level in society.

The process worked for decades yet it appears to be failing now. Why? Is it poor teaching? Are students today much worse than years before? Is it lack of funds? On the contrary, the causes of this failure are not so obvious. Teachers work harder than ever. The information base in their content areas is constantly expanding and they struggle to maintain their expertise even if the effort must take place on their own time. Economic pressures increase their teaching load while reducing support from paraprofessional personnel. They are urged to incorporate teaching strategies without the training necessary to do so. Poor teaching, when identified, is often the symptom not the problem. Mecklenburger (1990) points out that while the nation demands 21st century schools, the dominant educational methods are chalk, lecture, and a textbook. So why haven't teachers changed? They are caught in an inappropriate Industrial Age model of education that is failing. They are confined to classrooms with little more than chalk realistically and readily available. They are expected to add their ingredient to the student-in-process without regard to the individual nature of the raw material. They are pressured to be more productive; to produce more units of finished students. They experience frustration at a system that is at its core depersonalizing. They become mechanical or give up. They burn out.

What of the students? Are they really worse than a generation before? It is unlikely that there are any biological foundations for deterioration of academic achievement. However, the

Information Age social environment in which the children find themselves is having a dramatic impact on their educational expectations. Students now spend most of their day in an educational system that does not reflect their personal reality. These young people are a part of the post-industrial society, a media-rich Information Age. Finite, structured, rigid educational practices do not work well with them. They respond to technology. They are comfortable with and adapt easily to the next innovation. They are flexible learners who have by necessity become accustomed to the pace and intensity of their Information Age society. Placing these individuals in an Industrial Age school system often confines and frustrates them. They question the system and its criteria for success. They quite reasonably question if it is really necessary to memorize the steps for arithmetic calculations when calculators are available on their watches.

Will additional funds help? Change is costly but imperative. Funds will help if they are invested in initiatives that fundamentally restructure education to better reflect the society it now serves. Doucette (1993) calls for a shift in paradigms to one that supports the Information Age. Funding that shift is an economic necessity. Continuing to invest in the current educational scenario is wasteful. Purchasing another computer for a school that has no funds allocated for technological implementation, faculty training, and curriculum redevelopment is as pointless as it is a common practice.

Jones and Hixson (1991) suggests that it is time to rethink education as it is currently practiced. Further, it is time to reconsider current educational philosophies and the superstructures that reflect them. The Information Age is upon us, pressuring the societal systems to respond. Students educated for success in the information rich 21st century must be as competent in the three A's (Acquire, Analyze, Access) as they are in the three R's. Lifelong

learning will be mandatory to survive in the job market. Two-thirds of the workers in the years to come will be engaged in some type of information work (Long, 1993). Educators cannot continue the Industrial Age model that encourages passive learning. We must instead shift to instructional models that encourage the learner to become actively engaged in the acquisition of what he or she needs to know. Leonard (1992) suggests that education needs to refocus on the interaction between the learner and the environment, not on the content itself. This new focus will be the key to education in the 21st century. It is the foundation upon which education needs to reorganize. Technology will make this new organization possible (Mecklenburger, 1990).

Education for the 21st century must focus upon the learner at the core of the educational process. But the learner at the core of the curriculum alone is not enough. The learner must be at the core of the delivery system as well. The teaching/learning process includes not only the content, but also the strategies to achieve objectives and the delivery system used to implement the strategies. Curriculum restructuring addresses itself to realigning content and strategies to place the learner rather than the teacher at the center of the process. Educational institutions must also support the restructuring necessary to place the learner at the center of the delivery systems. Traditional classroom delivery requires that the learner be at a given place, at a given time. This rigid structure serves well if the learner's life circumstances allows the subjugation of all responsibilities to the demands of one's education. But if the learner has other life responsibilities competing for time or is incapable of leaving his or her location, education becomes inaccessible. The learner is not the focus of such a delivery system, the institution is its center. Social changes in the Information Age make this scenario unacceptable. Just when skilled knowledge workers are so critically needed, rigid delivery formats in institutions make education less accessible. How

can institutions make their delivery systems more flexible and provide greater access to education? Allen (1990) suggests that technology has evolved to the point where it can provide access anytime and anywhere. Using such technology can enable an institution to place the learner at the center of the delivery strategies and provide education that is neither time or place bound.

Restructuring for Multi-Access Education

Multi-access education is a three-tiered model for higher education for the Information Age. This model encompasses both traditional and nontraditional scenarios. It requires an acceptance of more than one delivery system. Just as weekend and evening courses are added to traditional day courses in order to provide for the needs of the learner, multi-access education provides additional delivery scenarios. Above all, it requires that one accept the learner as the center of the teaching/learning process.

The multi-access model includes three delivery formats that exist simultaneously on any campus. These include the *traditional format*, the *on-campus facilitated format*, and the *off-campus distance education format*. Each delivery system is content independent. Each has its own unique instructional design, adapted to make the most of the delivery system. Each incorporates a learner centered philosophy. Each is extensively supported by technology.

The first format uses the traditional classroom delivery. It is both time and place bound instruction. Learners must come to the campus for instruction at a given time. It provides the least opportunity for access of the three formats in the multi-access model. Though often teacher centered, the traditional delivery system can be student centered instead. Different students have different styles of learning. Different teachers have different styles of teaching. Even in the traditional setting, teaching style does not have to be confined to that which the instructor

possesses. Learners whose style of learning is not addressed by a teacher's lecture need not be lost or neglected. Technology can provide variation and support. For example, the inclusion of a multimedia sequence (sound and video to accentuate a concept) to a lecture can add a dimension to the teacher's presentation that was not a part of the teacher's repertoire. The addition of a computer supported lesson with sound and video, as well as text could provide review for learners who learn more slowly than their peers. Teacher presentations using technology to create visual images to support abstract concepts address the needs of the majority of learners, those students who are visual learners. Even in the time and place bound traditional classroom, technology can assist faculty in making the learner the center of the process. Beaudoin (1990) suggests that teaching is not made obsolete by technology, it is instead transformed by technology.

Still, the traditional format is at its core directive, with the learners essentially passive. It suffers not only from its time and place restrictions, it is based on an instructional model that is inadequate to prepare a student to be a knowledge worker in the Information Age. The second format in the multi-access education model rectifies this. The on-campus facilitated learning format is place but not time bound. It requires that the student come to the campus to learn but frees them of time restrictions. This second of the multi-access formats increases access to those who can physically come to the campus but who have difficulty attending at prescribed times. This model is, by nature, student centered. In this model, the faculty member facilitates and monitors the learning of the students enrolled in the course. The faculty identifies objectives and plans the learning strategies to accomplish the objectives. The faculty facilitator further identifies the specific content to be learned. The strategies that require personal interaction between student and either themselves or paraprofessionals on the faculty's teaching team are identified and

scheduled. Technology supports faculty efforts by providing technology-rich labs, resource rooms, and tutoring areas that offer places to implement the learning activities detailed by the faculty member. These technology intensive learning environments provide places for student interaction and strategy implementation. They are supported by technicians and content area tutors who are available to students during day and evening hours. Students engage in the faculty prescribed activities in campus technology centers but at a time convenient to them. Student activities may include exploring a content specific multimedia presentation, viewing a taped faculty demonstration followed by a computer tutorial, computer-based testing, or network-based research and word processing. The learner is at the center of these activities engaged in accessing, analyzing, and synthesizing the information the faculty wishes him or her to explore. Beaudoin (1990) suggests that the teacher becomes the intermediary between content and learner. The learner is also actively gaining skills using the technologies he or she will need in the Information Age. The teacher is the facilitator of the experience. The technology lab and paraprofessionals provide learner support throughout the process. This delivery format, when correctly designed, provides a variety of learning opportunities for all types of learning styles. It is an opportune atmosphere for acquisition of the skills and cognitive processes that make for a successful knowledge worker.

Once content area strategies are revised for delivery through on-campus facilitated learning, they are just one step away from the final format of the multi-access model, off-campus distance education. This final format is neither time nor place bound. It provides maximum opportunity for access. Mecklenburger states that with distance education, "School is where the learner is." (1990, p. 107). Students might be incarcerated, unable to leave home due to illness,

or in a different country. Regardless of the location or the time differences, students can access their facilitated classes. How can this be possible? It can be accomplished through the support of current and emerging technologies. The facilitated instructional design minimizes faculty contact hours while increasing faculty planning and support time. Technology can even now deliver instruction via any combination of print, computers, modem and telephone lines, audio, and broadcast or recorded video. Soon, networks such as those proposed by the Clinton/Gore administration will provide electronic highways along which instruction can travel into any home, office, or institution. Just as the physical highways provided access to the products of the Industrial Age, these electronic highways will provide access to products of the Information Age. This final delivery format creates virtual classrooms anywhere the learner can plug in his or her computer station. For higher education institutions, with simple technology loan programs, this format will provide equal access to all, regardless of life circumstances. The facilitated instructional design used on campus is easily adapted to this final format. Facilitated learning will train knowledge workers while distance delivery provides them practice in the instruments of the Information Age.

Higher education institutions do not have to choose between these formats. Instead they should meet the challenges before them by providing all three formats through a comprehensive multi-access education initiative. By restructuring to offer education through multiple access opportunities using a variety of formats, institutions can provide education appropriate to the Information Age. Too often, institutions acquire technologies and even schedule technology training without first considering the nature of the role that technology will play. Technology in education is useful and necessary only if it directly supports the teaching/learning process. It is

a tool to enhance instruction or improve access to instruction. Allocation of resources to technology should be considered only if such acquisition clearly meets these goals. Restructuring for multi-access education is an action plan that answers these needs.

Issues in Restructuring for Multi-Access Education

Staman (1990) calls for the creation of momentum to restructure. Baird and Monson (1992, p. 75) asserts that "This is not a time to stand still." Educational leaders must initiate, implement, and manage the change process. Significant issues must be addressed when such restructuring is being considered. These include planning, infrastructure reorganization, technology acquisition, training, and implementation support.

Strategic planning is essential for effective and efficient operations in environments that change quickly. Clearly, no where is it more critical than in planning for technology intensive changes. Blatzer (1991) suggests that one must develop strategies to maximize opportunities and minimize obstacles. Strategic planning for technology forces an organization to think through the process of change and identify technologies that will support the changes sought. Without planning, technology acquisition is often incompatible with existing environments or inappropriate for institutional objectives. Millions of dollars of resources can easily be wasted. To restructure for multi-access education, an institution must develop, implement, and annually revise a strategic plan that will move it towards its goals.

The next institutional issue that must be addressed is the technology infrastructure. Few institutions have an organizational structure appropriate to the management of technology. Technology infrastructures, if they exist at all, are based upon obsolete technologies. The rise of the microcomputer with the computing power of a mainframe and networking that provides

unprecedented connectivity has changed the face of technology. Instructional technologies such as multimedia have blurred or erased lines between computing and traditional audio-visual departments. Many library resources are now computer-based rather than print-based. Old infrastructures and their resultant territories do not allow for effective management of Information Age resources. An institution must recognize the inadequacy and potential harm of its current infrastructure and be willing to reorganize to appropriately and efficiently manage its technology resources. Centralization of complex technology decisions may prove to be necessary to avoid waste. Yet care must be taken to be sure that all decisions have at their core the educational goals of the institution. The new professional, the educational technologist, who is neither primarily a technician nor primarily an educator, but equal parts of both, must be validated by the structure. In this way an institution can rely on decision making that places equal emphasis on the technology and on its purpose in relation to the educational organization.

Once management structures are in place, technology acquisition can begin. This process requires coordination of the needs of the institution as a whole, the needs of the various components of the institution, and the availability of current and emerging technologies. Standards must be considered and applied in acquisition. Purchases made without regard to connectivity and strategic planning or according to technological whim will waste resources and hamper restructuring. Acquisition must be a carefully planned, monitored, and revised effort.

Restructuring with technology must also address the technological skills of current human resources. Training for all parties who will use the technology is critical. Faculty, administrators, staff, and students must be provided opportunity for training. Such training should not be limited to the traditional workshops. Like the curriculum and delivery format changes at

the core of the restructuring, training must be provided using multiple access and learner-centered environments. Administrators must choose to use technology not just to improve efficiency but also to act as a role model for the institution. Faculty must be supported in the use of the technologies of instruction. Staff must be trained to assist faculty. Students must be provided the opportunity to gain the basic technology skills to use the new delivery formats. A comprehensive training program is an essential component to successful restructuring.

Once the strategic plan is created and implementation has begun, administrative support must be provided throughout the process. Faculty asked to redesign curriculum for facilitated delivery or with technology integration must be provided time or compensation. Paraprofessional support must be budgeted for. Allocation must be made for technical support of the technology. Educational technologist must be provided the administrative support necessary to meet the goals identified. Restructuring cannot occur without the recognition of and allocation to the implementation process itself. Administrative leadership must adequately support the restructuring process.

During these current lean economic times, these issues seem to be costly arguments against restructuring for multi-access education. However, one must stop to consider some of the administrative gains made by such restructuring. If an institution increases accessibility to programs, it has thereby increased its potential audience. The possibility of additional credit hours warrants the investment. In addition, if faculty facilitate courses rather than teaching in the traditional format, more instruction can be done with the assistance of paraprofessionals. Faculty loads could be computed differently and productivity would likely be increased. And, without the confines of classroom walls, what would really limit "class" size? Finally, in considering distance

delivery, one cannot overlook the fact that a campus can exist without any classroom space at all. The economic savings in construction alone would justify the costs. Clearly, the investment in restructuring for multi-access education is likely to pass any cost vs. benefit tests.

Conclusion

"The educational use of technology should be needs-driven, function-oriented, and planned for" (Foster, 1991, p. 151). Multi-access education meets each of these three criteria. When implemented and fully supported by leadership, it is also cost effective and in keeping with the goals of the institution it serves. Business has already recognized its worth. Fifty-four percent of the Fortune 500 companies currently train their employees via technology (Long, 1993). Business has long subscribed to the concept of "time is money" and has found that instruction via technology both on site and across distances is the most economical and feasible instruction available. Education is one of the few institutions in which time and money are rarely connected. Saving time and money by providing more instruction to more students with less expensive people resources and more economical technology resources should be a primary goal of all educational institutions during these monetarily lean years.

But even more importantly, multi-access education provides *better* instruction to the learner. It causes the curriculum and the faculty to focus upon the learner as the center of the teaching/learning process. It increases access to education for those who need to acquire saleable skills, to continue to update skills or to enhance lifelong learning. It prepares the learner for his or her role in the Information Age.

It is interesting to imagine a doctor and a teacher traveling through time from the year 1893. The doctor, transported from an operating room into one in our century, would be in awe

of the advances and technological marvels available to him or her. The teacher, chalk in hand transported from yesterday's classroom into one of today's, would experience considerably less surprise. In fact, it is likely that after brushing up on content area advances, he or she would easily be able to proceed to teach using the same tool, the chalk, that was brought from the last century. It is not that the technology has advanced less in education than it has in medicine. It is simply that educators have not chosen to use it. Medicine has chosen to use every means to save or enhance a patient's life. Why should educators do any less? It is time to be proactive in the use of technology in education. It is time to devise cohesive goals for technology to support and enhance learning. It is time to restructure to improve both the teaching/learning process and the access to it. It is time for higher education to enter the Information Age.

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